

The Mind-Object Identity and Special Relativity

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Most of the literature about the mind, both in neuroscience and philosophy, is still based on naïve Newtonian physics [1–4]. In particular, it is often assumed that the present is point-like and absolute for all physical systems and, consequently, that there is a separation between the external object and the neural activity. Moreover, cases such as dreams or hallucinations require the postulation of additional entities – e.g., mental images – that transfer “meaning” through time. Overall, these assumptions lead to the so-called hard problem of consciousness [5].

In this paper, I will show that key notions from Special Relativity (SR) – in particular, the analysis of simultaneity and Minkowsky’s spacetime – allows us to reconceive the physical world in way that does not lead to the hard problem. The point of attack is the notion of instantaneous present that entails the separation between subject and object, let alone the time-lag problem, the problem of intentionality, and the alleged difference between standard perception and other forms of experience [6] – i.e., dreams, memory, hallucination.

In standard accounts in neuroscience and philosophy of mind, given the speed limits of physical processes, the aforementioned assumption entails that what happened before does not longer exist and thus that the subject and the object are temporally separate (and consequently physically and metaphysically separate). The external object is in the past and the neural activity is in the present. Thus, either the neural activity has retained some feature of the long-gone object or the neural activity has some intrinsic qualitative property that we (mistakenly) associate with the external world. The former view leads to representationalism, while the latter is close to Russellian monism.

Remarkably, the above discussion (and all the counterintuitive consequences) might be avoided if a relativistic account of space time is adopted. In fact, if events take place in a relativistic space-time manifold, the notion of the present is no longer point-like. The present is spread to include all events whose signals reach a given reference point. Adopting SR from the start, I will show that it is possible to formulate and defend a mind-object identity theory – elsewhere called Spread Mind [7–9] – that explains both hallucination and perception in terms of identity with external objects. The basic idea is that, at any time, the physical subset that is identical with one’s experience of the world is one and the same with the set of objects whose effect takes place in the brain.

The proposal is the following: the (relative) present of an event e is defined as the set of events whose causal influence is part of the circumstances that determined e . Such a present is smaller than the traditional light-cone, which is its upper limit. In the case of the mind, the present of a neural activity is no longer the set of events that take place at the time of the neural activity, but rather the causes, wherever and whenever they took place, of it. One’s experience does no longer emerge out the neural activity (the instantaneous present of many current models in neuroscience). One’s experience is constituted (and indeed, as I will claim, identical with) the previous causes of it.

I propose to consider whether such a collection of events is identical with one’s experience. Consider standard perception as when I perceive a red round and shiny apple. The apple causing my neural activity – because of the time light takes to travel and the time neural processes take to travel from my retina to my upper cortical areas – took place, give or take, between 50 and 250 msec before the final activity in my visual cortex. What is the thing that is one the same with my experience? While the neural activity is surely

a suitable candidate (as was indeed suggested by mind-brain identity theorists), it does not have any of the properties I found in my experience (redness, roundness, shininess). Therefore, I propose to consider mind-object identity. In the case of the apple, one's experience of the apple is one and the same with the apple itself. We don't know a priori what physical subset of physical reality our experience is. Thanks to Minkowski's spacetime and Einstein's analysis of simultaneity, consider the apple itself rather than one's neural activity. The apple is the *present relative to my neural activity*. The apple is indeed red round and shiny just like my experience.

SR allows us to consider more complex cases that, in a standard Newtonian framework, would require completely different explanatory strategies. Consider hallucinating a flying pink elephant. Is it different from seeing a red apple or, thanks to SR, can it be recast in terms of perception, albeit unusual? In fact, when I hallucinate the aforementioned pachyderm, the neural activity taking place in my brain is the causal outcome of three previous objects I met during my life: a flying object, a pink patch and a gray pachyderm. At this very moment, those three events are producing an effect in my brain. It is not impossible to envisage that different causes, variously delayed and redirected, have proceeded through tortuous causal rigmaroles and detours that have ended with their unexpected union in some cortical areas of mine. At this very moment, a gerrymandered object, spatiotemporally scattered, has eventually produced a joint effect *e*. This object, no matter how unusual for our parochial expectations, is the relative present of *e*. And, to all extent, it is a physical object capable of its own legitimate causal efficacy, not unlike what we stare at in a kaleidoscope. SR and the analysis of simultaneity allows us to see such a gerrymandered object for what it is: a physical object inside one's present not different from the red round and shiny apple.

Similar considerations allow us to address cases such as dreams or memory in terms of perception avoiding the need to introduce ontologically expensive entities such as mental images, hallucinations, and memories. By spreading one's spatiotemporal present in a way consistent to SR, the mind is always one with its objects. This is consistent with the fact, otherwise very mysterious, that all our experiences, no matter how outlandish or pathological, are invariably composed only of fragments of our previous existence – e.g. we never dream of a color that we have never perceived with our eyes.

The bottom line is that key SR notions, if embodied in the analysis of the physical basis of perception, allow us to defend the mind-object identity theory in an empirically consistent way. The present is the spatiotemporally scattered set of causes whose final effect take place in the brain. Such set of events is *the present relative to the neural activity*. The present is the collection of events that cause the neural activity whatever and whenever they have been located – be them a far away star, a nearby red apple or a long-gone pachyderm.

References

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